



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/781,189	02/17/2004	Tatsunari Mii	85A 3503	1772

3713 7590 06/21/2005

KODA & ANDROLIA  
2029 CENTURY PARK EAST  
SUITE 1140  
LOS ANGELES, CA 90067

EXAMINER
----------

ABOAGYE, MICHAEL

ART UNIT	PAPER NUMBER
----------	--------------

1725

DATE MAILED: 06/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/781,189

Applicant(s)

MII, TATSUNARI

Examiner

Michael Aboagye

Art Unit

1725

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2 and 4 is/are allowed.
- 6) ☒ Claim(s) 1 and 3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02/17/04 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>02/17/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Babinetz et al. (US 2004/0152292).

Babinetz et al. teaches a bump formation method comprising a sequence of: a first step that forms a ball on a tip end of a wire that comprises through a capillary and joins said ball to a conductor to form a press-bonded ball; a second step that raises and moves said capillary in a horizontal direction so that a flat portion on a lower end of said capillary is positioned to face said press-bonded ball; a third step that lowers said capillary so that said press-bonded ball is pressed to form a first bump; a fourth step that raises and lowers said capillary in an opposite horizontal direction from said horizontal-direction movement of said capillary in said

second step so that said flat portion on said lower end of said capillary is positioned to face said first bump; a fifth step that lowers said capillary so that said wire is bent and pressed against a surface of said first bump, thus forming a second bump; and a sixth step that cuts said wire from said second bump.( See page 2, par. [0018] and Fig.4 (A- F)).

3. Claim 3 is rejected under 35 U.S.C. 102(e) as being anticipated by Babinetz et al. teaches a bump formation method comprising a sequence of: a first step that forms a ball on a tip end of a wire that comprises through a capillary and joins said ball to a conductor to form a press-bonded ball; a second step that raises and moves said capillary in a horizontal direction so that a flat portion on a lower end of said capillary is positioned to face said press-bonded ball; a third step that lowers said capillary so that said press-bonded ball is pressed to form a first bump; a fourth step that raises and lowers said capillary in an opposite horizontal direction from said horizontal-direction movement of said capillary in said second step so that said flat portion on said lower end of said capillary is positioned to face said first bump; a fifth step that lowers said capillary so that said wire is bent and pressed against a surface of said first bump, thus forming a second bump with the direction of inclination of an inclined wedge oriented towards an opposite side of from the said first conductor; and a sixth step that cuts said wire from said second bump, thus forming a two-stage bump; and then said primary bonding is thereafter performed, after which said wire is looped from the said first conductor with respect to said bump, and said secondary

bonding is performed on said inclined wedge on the upper portion of said bump.( See page 2, par. [0018] and Fig. (2 – 5))

***Allowable Subject Matter***

4. Claims 2 and 4 are allowed.

5. The following is a statement of reasons for the indication of allowable subject matter: the instant application is deemed to be nonobvious improvement over the inventions of Babinetz et al. (US 2004/0152292).

The improvement in claim 2 comprises a sixth step that raises and moves said capillary in an opposite horizontal direction from said horizontal-direction movement in said fourth step so as to cause said flat portion on said lower end of said capillary to be positioned to face said second bump; a seventh step that lowers said capillary so that said wire is bent and pressed against a surface of said second bump to form a third bump; and an eighth step that cuts said wire from a uppermost bump.

The improvement in claim 4 comprises a seventh step that lowers said capillary so that said wire is bent and pressed against a surface of said second bump to form a third bump; and an eighth step that forms an inclined wedge on a final uppermost bump so that a direction of inclination of said inclined wedge is oriented toward an opposite side from said first conductor, said eighth step further cutting said wire from said final uppermost bump, thus forming a multi-stage bump; and then said primary bonding is thereafter performed, after which said wire is looped from said first

conductor with respect to said bump, and said secondary bonding is performed on said inclined wedge on the upper portion of said bump.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Van De Pas et al. (US Patent no. 4442967), Lee (US Patent no. 6863208) and Imai et al. (US Patent no. 6715666) are cited of interest for illustrating the state of the art in wire bonding process.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Aboagye whose telephone number is 571-272-8165. The examiner can normally be reached on Mon - Fri 8:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Dunn can be reached on 571-272-1171. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system.

Art Unit: 1725

Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michael Aboagye  
Assistant examiner  
Art Unit 1725

A.M.  
A.M.  
6/16/04

KEVIN KERNS  
PRIMARY EXAMINER

*Kevin Kerns 6/16/05*